

stood in hospitals, which requires a certain proportion of miasma (say 7 per cent), to affect us with contagion, enable us to escape mischief in the open country; but nearer every farm-house, and worse in and around the cottager's abode, deadly vapours, in a condensed form, affect our senses. Pig-styes and calf-hutches, however clean they may be kept, are often, from want of light and of air, the cause of death to the animals themselves, and of sickness to those who tend them. To the same cause may often be ascribed the wholesale mortality among poultry. That which created the Tooting disease among children, I am persuaded, doubles the casualties of our farm stock.

But to come nearer the human dwellings. Of all places, the necessary, near a country residence, is perhaps the most poisonous, from exhalations of vegetable and animal origin, commixed and carefully shut down, perhaps for hours, until, being opened, the condensed venoms let loose annoy our senses and overpower our lungs and stomach; especially if this should occur late in the day or at night, when the effluvia are most noxious, and our power of resistance at its minimum. Constant ventilation must be the only safety-valve here and in many other cases. Nowhere ought there to be a close cover, unless there be ventilating pipes; and from my observation I am disposed to think that attention to this, in town and in country, would do much to reduce the amount of sickness and of death among mankind, and their property—domestic animals. Let country surveyors think of this. G. F.

### RAILWAY JOTTINGS.

THE contract for the station works for the Preston extension of the East Lancashire, at Preston, has been taken by Messrs. Samuel and James Holmes, of Liverpool.—An iron bridge, of large dimensions, is in course of construction at the iron foundry of Messrs. Finch and Willey, Windsor. Its extreme length will be 600 feet, there being four arches or spans, one of 300 feet, and three of 100 feet each. The design is one by Mr. Brunel, C.E., and the structure is for the South Wales line, to cross the Wye at Chepstow.—A method of exhibiting the names of stations especially at night, by painting on wire gauze, and lighting when requisite from within a lantern faced with the gauze, is being adopted at Gateshead. The invention is one by Mr. Meik of Sunderland and Mr. Watson of Newcastle, and has been hitherto used on the dial of a tidal gauge.—Chamroy's Helical Railway, a patented invention, is proposed for the purpose of lifting or lowering carriages from one line of rails to another, on a different level. A line of rails is arranged in a helical manner, with a platform on three wheels, fixed at different levels. A vertical grooved shaft passes through the centre of this platform from top to bottom, and receives rotary motion from any prime mover. The platform is furnished with a bolt which may be slid into the groove in the shaft, and a rotary motion thereby imparted to it. On the platform rest the wheels of another, fitted with guides that embrace rollers fixed to the sides to prevent its revolving; and on this second platform is placed the load to be lifted. On rotary motion being given to the vertical shaft, the under carriage will also revolve, and travel up the Helical Railway. By reversing the motion of the shaft the loads will be lowered. The lifting of loads, or water, in mines, appears to have been the primary object of this invention, as described in the *Mining Journal*.—In the course of a recent trial at the Yorkshire assizes, it became a question as to what was a proper charge to be made by a railway engineer for his professional services, and an eminent engineer in that county was asked how much he charged per day as consulting engineer. The reply was, "That varies from 10 guineas to 100, according to circumstances." Our contemporaries of the newspaper press as they circulate the anecdote say,—"this is 'the way the money goes.'"—It appears from a return just issued, that the number of persons employed on railways open for traffic on 30th June, 1849, was 55,963, and the length of railway then open for traffic, 5,447½ miles, being rather more than 10 persons per mile. There were amongst them 107 engineers, 103

draughtsmen, 1,839 engine-drivers, 1,871 assistant engine-drivers and firemen, 1,631 guards and brakemen, 5,508 platelayers, 10,809 artificers, and 14,929 labourers. The total number of persons employed on railways not open for traffic on 30th June, 1849, was 103,816, and the total length of railway authorized, in respect of which they were employed, was 6,636½ miles, of which 1,504½ were in course of construction. There were 269 engineers, 153 draughtsmen, 16,144 artificers, and 83,083 labourers. The total length of railway authorized to be used and constructed on 30th June, 1849, was 12,083½ miles, and the total number of persons employed thereon, 159,784.

—The railway calls are fast dwindling down to moderate limits. The amount required for the current month of April is 304,776½ against 844,249½ for the corresponding month of last year, the latter sum being itself a great diminution when compared with previous calls. —The Tithebarn-street station of the Lancashire and Yorkshire Company at Liverpool is to be opened for public traffic on 1st May. It is stated, says the *Albion*, that upwards of 500 houses were pulled down to make room for the station. There are five lines of rails to accommodate the traffic of three companies; namely, the East Lancashire, the Lancashire and Yorkshire, and the Liverpool and Southport. The passenger station is covered in by two iron roofs, one of them extending 640 feet in length and being 136 feet span. The other roof is 80 feet in span and 160 feet in length. The rails are 30 feet above the level of the street, and by means of powerful machinery the goods waggons are raised on the line and lowered to the street in order to facilitate the loading and unloading. The works and buildings on the extension line and station are of an extensive character, and have cost a very large sum of money.—Mr. G. Shepherd, C.E., suggests, in the *Mining Journal*, that pulverized chalk might be used on greasy or slippery rails, to restore or increase the friction of the wheels of locomotives and trains in transit, and thus prevent accidents by the overpowering of the brakes, the force of which over the wheels would also, he observes, be directly increased by the chalk being carried from the rail round the wheel to the break itself. The idea of applying so trusted and immemorial an anti-greaser of tight-rope and dancing-pumps to so useful a purpose in place of sand, is really a happy one, though unaccountably long in turning up. Mr. Shepherd also points out its advantage in ascending heavy inclines.—The *Wiener Zeitung*, of 7th instant, contains the announcement that a prize of 30,000 imperial ducats will be paid to the constructor of a locomotive with sufficient power to operate in tugging trains over the Semmering, which mountain intercepts the railway line between Neustadt and Bruck, on the Vienna-Trieste line.

### THE NEW PRISON FOR THE COUNTY OF SURREY.

IN arranging the designs for the Surrey new prison, now in course of construction at Wandsworth, under the direction of Mr. D. Hill, architect, it has been attempted to make them in such a way as to be uniform and complete for the number at first intended to be provided for (700), and that the future extension (to 1,000), should not interfere with the buildings erected nor destroy their uniformity. The buildings are designed in the plainest and most simple style, and of the most substantial kind. They are executed in brickwork, with stone dressings, quoins, plinths, cornices, window sills, &c., and are arranged on the principle of Pentonville prison, and with the latest improvements in the various fittings and details.

There are 543 cells provided for male prisoners, and 165 for females, making a total accommodation for prisoners of 708 cells, not including punishment and reception cells: the whole will be thoroughly ventilated, and fitted up with soil pan or water closet, washing basin, with sufficient supply of water (a separate cistern being provided for each cell), and a gas light.

Rooms on the ground, first, and second floors, adjoining the central hall, have been provided for trade instructors. Baths have

been provided both for males and females supplied with hot and cold water.

The cooking kitchen, bakehouse, and serving rooms are entirely distinct from the main buildings.

The washhouse is likewise separate, and will be fitted up with washing stalls, each for one person, and supplied with hot and cold water. A tank for soft water is provided contiguous to the washhouse. The laundry is under the same roof, and will be fitted up with ironing boards, stoves, and proper drying closets.

The infirmaries, both for males and females, are entirely separated from the other parts of the prison, and are provided with separate airing courts.

The chapel will be fitted up with separate seats or stalls for 394 prisoners, pews for governor's and chaplain's families, and galleries for the officers. The approach for the females will be by a covered way and bridge, on the level of the chapel floor, and to allow of the chapel being filled as quickly as possible, six entrances are provided from the males' prison. There will be provided a board room, offices for governor, chaplain, clerks, surgery, visiting rooms for prisoners' friends, officers' mess room, offices for the steward and his clerk, waiting rooms, stores for provisions and raw material, &c. &c.

Within the prison, quarters will be provided for 24 male and 6 female officers. Quarters are provided on the outside of the walls for the governor, chaplain, assistant chaplain, surgeon, and for 6 warders.

The prison will be warmed by hot water, similar to the manner adopted at Pentonville, flues being provided for the admission of the warmed air to each cell, and extraction flues to carry off the vitiated air, these flues terminating in the ventilation shafts.

The whole of the cells, both for males and females, are 13 feet by 7 feet, and 9 feet high to the crown of the arch.

The engraved plan shows the prison complete for 1,000 prisoners: the back wing in the males' prison, and the left-hand wing in the females' prison, are those which are not being built at present.

The following are

#### THE REFERENCES TO GROUND PLAN.

##### Males' Prison.

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|---------------------------------|------------------------------|
| 1. Waiting room.                | 11. Governor's office.       |
| 2. Officers' room.              | 12. Ditto Clerk's office.    |
| 3. Physician's room.            | 13. Store.                   |
| 4. Warders' room.               | 14. Inspection hall.         |
| 5. Ditto bed room.              | 15. Chief Warder's room.     |
| 6. Assistant Surgeon's parlour. | 16. Trade Instructor's room. |
| 7. Ditto bed room.              | 17. Surgery.                 |
| 8. Magistrates' waiting room.   | 18. Cells.                   |
| 9. Ditto room.                  | 19. Officers' rooms.         |
| 10. Prisoners' visiting room.   | 20. Infirmary.               |

##### Females' Prison.

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|------------------------------|---------------------|
| 1. Waiting room.             | 7. Matron's office. |
| 2. Prisoners' visiting room. | 8. Officers' rooms. |
| 3. Matron's sitting room.    | 9. Cells.           |
| 4. Ditto bed room.           | 10. Laundry.        |
| 5. Female Turnkeys' room.    | 11. Drying closet.  |
| 6. Ditto bed room.           | 12. Boiler room.    |
|                              | 13. Washhouse.      |
|                              | 14. Washing stalls. |

The basement contains—

**Males' Prison.**—Examining room, reception cells, receiving room, baths, fumigating closet, apparatus room, prisoners' own clothes store, clothing store, cleaning room, principal officers' mess room, warders' mess room, steward's stores, steward's office, store, bread room, potato store, cook's room, coal store, workshops, males' serving room, cooking kitchen, females' serving room, scullery, boiler room, bakehouse, can room, meat store, larder, baths, coal store, punishment cells, store-keeper's office, clerk of the work's office, prison stores, rich cells, dead house.

**Females' Prison.**—Examining room, reception cells, baths, prisoners' own clothes store, clothing store, fumigating closet, apparatus room, workshop or school room, store, serving room, kitchen, scullery, larder, coal store, baths, punishment cells.

We shall next week give a section of the building and plan of the chapel, which will render our illustration complete.